

Claims

In the claims:

1. (Currently Amended) An apparatus for use with a distributed process control system having a user workstation remotely located from a distributed controller that controls one or more field devices using control modules, the apparatus comprising:

a computer having a memory and a processing unit;

a configuration application stored in the memory of the computer which, when executed on the user workstation or the computer, creates one or more control modules for execution by the distributed controller and a further module for execution by a device separated from the distributed controller, wherein at least one of the control modules is created to communicate with ~~a further module in a~~ the further module within the device separated from the distributed controller to perform a control activity; and

a controller application stored in the memory of the computer, which may be executed on the processing unit of the computer, wherein the controller application, when executed on the distributed controller, implements the one of the control modules during operation of the distributed process control system to communicate with the further module to perform the control activity;

wherein the configuration application, when executed on the computer, further creates the one of the control modules ~~capable of being used~~ for use by the distributed controller within the distributed process control system and wherein the controller application when executed on the computer causes execution of the one of the control modules and the further module within the computer to simulate the operation of the one of the control modules including simulating communicating with the further module to thereby simulate operation of the distributed process control system.

2. (Previously Presented) The apparatus of claim 1, wherein the configuration application, when executed on the computer, creates a user interface for use in displaying information to a user, and further including a viewing application stored in the memory of the computer to be executed on the processing unit of the computer, wherein the viewing application, when executed on the computer, uses the user interface to display information pertaining to the one of the control modules to a user.

3. (Previously Presented) The apparatus of claim 1, further including a configuration database application stored in the memory of the computer to be executed on the processing unit of the computer, wherein the configuration database application, when executed on the computer, communicates with the controller application within the computer to manage a configuration database.

4. (Previously Presented) The apparatus of claim 1, wherein the controller application includes an execution rate parameter specifying the rate of execution of the one of the control modules within the computer.

5. (Previously Presented) The apparatus of claim 4, wherein the execution rate parameter can be set to be greater than or less than a real time execution rate of the one of the control modules when the one of the control modules is executed within the distributed controller of the distributed process control system.

6. (Currently Amended) The apparatus of claim 1, wherein the configuration application, when executed on the ~~controller~~ user workstation or the computer, creates a further control module for execution within the distributed controller during operation of the distributed process control system.

7. (Previously Presented) The apparatus of claim 1, wherein the configuration application, when executed, creates the further module to be executed within one of the field devices communicatively connected to the distributed controller during the operation of the distributed process control system.

8. (Previously Presented) The apparatus of claim 1, further including a simulation application stored in the memory of the computer which, when executed on the processing unit of the computer communicates with the controller application within the computer to simulate the operation of the distributed process control system.

9. (Previously Presented) The apparatus of claim 1, wherein the controller application, when executed within the distributed controller, communicates with the field devices through an input/output device.

10. (Previously Presented) The apparatus of claim 1, wherein the controller application, when executed on the computer, communicates with a further controller that is of a different type than the distributed controller of the distributed process control system.

11. (Previously Presented) The apparatus of claim 10, further including a viewing application stored in the memory of the computer which, when executed on the processing unit of the computer communicates with the controller application and uses a user interface to display information sent from the further controller.

12. (Currently Amended) A method of simulating a distributed process control system having a user workstation remotely located from a distributed controller which controls one or more field devices using control modules, wherein the user workstation stores and uses a configuration application used to create the control modules for execution by the distributed controller to communicate with at least one further module within a device separated from the distributed controller and wherein the distributed controller stores and executes a controller application to control a process using the control modules during operation of the distributed process control system, the method comprising the steps of:

storing the configuration application in a first computer having a memory and a processing unit;

storing the controller application in the memory of the first computer;

executing the configuration application on the first computer to create a first control module to be used by the distributed controller within the distributed process control system to communicate with the at least one further module and to create the at least one further module to be used by a device apart from the distributed controller within the distributed process control system; and

executing the controller application on the first computer to cause execution of the first control module and the at least one further module within the first computer to thereby simulate operation of the distributed process control system.

13. (Previously Presented) The method of claim 12, further including executing the configuration application to create a user interface for use in displaying information to a user, storing a viewing application in the memory of the first computer and executing the viewing application on the first computer to display information pertaining to the first control module to a user on a display associated with the first computer using the user interface.

14. (Previously Presented) The method of claim 12, further including storing a configuration database application in the memory of the first computer and executing the configuration database application on the first computer so that the configuration database application communicates with the controller application within the first computer to manage a configuration database.

15. (Previously Presented) The method of claim 12, wherein executing the controller application includes specifying an execution rate for the first control module when executing the first control module within the first computer.

16. (Previously Presented) The method of claim 15, wherein executing the controller application includes executing the first control module at an execution rate that is greater than or less than a real time execution rate of the first control module when the first control module is executed within the distributed controller of the distributed process control system.

17. (Previously Presented) The method of claim 12, wherein executing the configuration application includes creating the at least one further module to be executed within one of the field devices communicatively connected to the distributed controller during the operation of the distributed process control system.

18. (Previously Presented) The method of claim 12, further including storing a simulation application in the memory of the first computer and executing the simulation application on the first computer to communicate with the controller application within the first computer to simulate the operation of the distributed process control system.

19. (Currently Amended) An apparatus for use in conjunction with a distributed process control system having a user workstation remotely located from a distributed controller that controls one or more field devices using control modules, the apparatus comprising:

a computer having a memory and a processing unit;

a display connected to the computer;

a controller application stored in the memory of the computer, wherein the controller application, when executed on the distributed controller, implements a control module during operation of the distributed process control system and wherein the controller application when executed on the computer communicates with a further controller that ~~is of~~ uses a different ~~type~~ communication protocol than the distributed controller of the distributed process control system; and

a viewing application stored in the memory of the computer which, when executed on the processing unit of the computer communicates with the controller application and uses the display to display information sent from the further controller.

20. (Original) The apparatus of claim 19, further including an interface connected between the further controller and the controller application.

21. (Original) The apparatus of claim 20, wherein the interface is an OPC interface.